

Claims:

1. A method of building a diagram, comprising the steps of:

5 a user selecting a graphical object in the diagram; and

displaying to a user a plurality of transformation operations to be performed on the selected graphical object for creating a second graphical object derived from the selected graphical object.

10 2. The method of claim 1, wherein the plurality of transformation operations are displayed in one of a context menu, a toolbar and a roll-up menu.

3. The method of claim 1, wherein the user selects the graphical object by moving a pointing over the graphical object.

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4. The method of claim 1, wherein the plurality of transformation operations include one or more of:

a copy operation,

a copy and morph operation for creating a second graphical object having one or more

20 properties that is different from the properties of the selected graphical object,

a duplicate operation for creating a second graphical object that is a shadow of the selected graphical object, and

a straight morphing operation for changing one or more properties of the selected graphical object change to create the second graphical object.

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5. The method of claim 1, further comprising the steps of:

a user selecting one of the transformation operations from the plurality of transformation operations; and

30 executing the selected transformation operation on the selected graphical object to create a transformed graphical object.

6. The method of claim 5, wherein the transformed graphical object is created in the diagram.

7. The method of claim 5, wherein the transformed graphical object has a different class from the selected graphical object.
8. The method of claim 7, wherein the transformed graphical object is an instance of a  
5 superclass of the selected graphical object.
9. The method of claim 7, wherein the transformed graphical object is an instance of a  
subclass of the selected graphical object.
10. 10. The method of claim 5, wherein the transformed graphical object shares a base class  
with the selected graphical object.
11. The method of claim 5, wherein the transformed graphical object is a shadow of the  
selected graphical object.
- 15 12. The method of claim 2, wherein the selected transformation operation is a copy and  
morph operation, wherein the transformed graphical object has one or more properties that  
are different from the selected graphical object.
- 20 13. The method of claim 12, wherein the transformed graphical object is a signal tap  
block for tapping a signal from the selected graphical object.
14. The method of claim 13, wherein the selected graphical object is a block having an  
output that represents the signal.
- 25 15. The method of claim 13, wherein the selected graphical object is a line representing  
the signal.
16. The method of claim 12, wherein the selected graphical object and the transformed  
30 graphical object are functionally related blocks.
17. The method of claim 16, wherein the selected graphical object and the transformed  
graphical object are one of source blocks and sink blocks.

18. The method of claim 12, wherein the transformed graphical object is an inverse graphical object of the selected graphical object.

19. The method of claim 18, wherein one of said transformed graphical object and said 5 selected graphical object is a bus creator block and the other of said transformed graphical object and said selected graphical object is a bus selector block.

20. The method of claim 5, wherein the transformed graphical object is a copy of the selected graphical object.

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21. The method of claim 20, wherein the transformed graphical object has implicit links to the selected graphical object.

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22. The method of claim 5, wherein the step of executing the selected transformation operation comprises morphing the selected graphical object into the transformed graphical object by changing one or more properties of the selected graphical object.

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23. The method of claim 5, further wherein the step of executing the selected transformation operation comprises executing a customized transformation operation created by a user.

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24. A method of building a diagram, comprising the steps of:  
a user selecting a first graphical object in the diagram; and  
executing a copy and morph operation on the first graphical object to create a second graphical object derived from the first graphical object, wherein the second graphical object has one or more properties that are different than the first graphical object.

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25. The method of claim 24, wherein the selected graphical object is a block outputting a signal, and the step of executing a copy and morph operation comprises creating a signal tap block for tapping the signal.

26. The method of claim 24, wherein the selected graphical object is a line representing a signal, and the step of executing a copy and morph operation comprises creating a signal tap block for tapping the signal.

27. The method of claim 24, wherein the selected graphical object and the transformed graphical object are functionally related blocks.

5 28. The method of claim 27, wherein the selected graphical object and the transformed graphical object are source blocks.

29. The method of claim 24, wherein the transformed graphical object is an inverse graphical object of the selected graphical object.

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30. The method of claim 29, wherein one of said transformed graphical object and said selected graphical object is a bus creator block and the other of said transformed graphical object and said selected graphical object is a bus selector block.

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31. The method of claim 24, further comprising the step of selecting a copy and morph operation to be performed on the selected graphical object prior to executing the copy and morph operation.

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32. The method of claim 31, wherein the step of selecting comprises selecting a copy and morph operation from a context menu displaying a plurality of transformation operations to the user.

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33. The method of claim 24, further comprising the step of the user entering a command associated with a copy and morph operation prior to the step of executing the copy and morph operation.

34. The method of claim 33, wherein the user enters the command using a command line mechanism.

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35. The method of claim 33, wherein the user enters the command using one or more accelerator keys associated with the copy and morph operation.

36. The method of claim 33, wherein the user enters the command using a voice command associated with the copy and morph operation.

37. A method of building a graphical diagram, comprising the steps of:  
a user selecting a graphical object in a graphical diagram; and  
executing a morph operation on the selected graphical object to change one or more

5 properties of the selected graphical object, thereby creating a transformed graphical object  
derived from the selected graphical object.

38. The method of claim 37, wherein the step of executing the morph operation comprises  
morphing the selected graphical object to a signal tap block for tapping a signal.

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39. The method of claim 37, wherein the step of executing the morph operating comprises  
morphing the selected graphical object into a functionally related graphical object.

40. The method of claim 37, wherein the step of executing the morph operating comprises  
15 morphing the selected graphical object into an inverse graphical object.

41. The method of claim 40, wherein one of said inverse graphical object and said  
selected graphical object is a bus creator block and the other of said inverse graphical object  
and said selected graphical object is a bus selector block.

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42. The method of claim 37, further comprising the step of selecting a morph operation to  
be performed on the selected graphical object prior to executing the morph operation.

43. The method of claim 42, wherein the step of selecting comprises selecting a morph  
25 operation from a context menu displaying a plurality of transformation operations to the user.

44. The method of claim 37, further comprising the step of the user entering a command  
associated with the morph operation prior to the step of executing the morph operation.

30 45. The method of claim 44, wherein the user enters the command using a command line  
mechanism.

46. The method of claim 44, wherein the user enters the command using one or more  
accelerator keys associated with the morph operation.

47. The method of claim 44, wherein the user enters the command using a voice command associated with the morph operation.

5 48. In a graphical modeling environment, a medium holding computer-executable instructions for a method, comprising the steps of:

a user selecting a graphical object in a graphical diagram; and

displaying to the user a plurality of transformation operations to be performed on the selected graphical object for creating a second graphical object derived from the selected 10 graphical object.

49. The medium of claim 48, wherein the method further comprises the steps of:

a user selecting one of the transformation operations from the plurality of transformation operations and

15 executing the selected transformation operation on the selected graphical object to create a transformed graphical object.

50. In a graphical modeling environment, a medium holding computer-executable instructions for a method, comprising the steps of:

20 a user selecting a first graphical object in a graphical diagram; and

executing a copy and morph operation on the first graphical object to create a second graphical object derived from the first graphical object, wherein the second graphical object has one or more properties that are different than the first graphical object.

25 51. In a graphical modeling environment, a medium holding computer-executable instructions for a method, comprising the steps of:

a user selecting a graphical object in a graphical diagram; and

executing a morph operation on the selected graphical object to change one or more properties of the selected graphical object, thereby creating a transformed graphical object 30 based on the selected graphical object.

52. A system for generating and displaying a modeling application, comprising:

user-operable input means for inputting data to the modeling application;

a display device for displaying a diagram; and

an electronic device including memory for storing computer program instructions and data, and a processor for executing the stored computer program instructions, the computer program instructions including instructions for displaying a plurality of transformation operations to be performed on a graphical object after the user selects the graphical object.

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53. The method of claim 52, wherein the program instructions further include instructions for executing a selected transformation operation on the selected graphical object after a user selects the selected transformation operation from the plurality of transformation operations.

10 54. A system for generating and displaying a modeling application for simulating a dynamic system, comprising:

user-operable input means for inputting data to the modeling application;  
a display device for displaying a diagram representing the dynamic system; and  
an electronic device including memory for storing computer program instructions and

15 data, and a processor for executing the stored computer program instructions, the computer program instructions including instructions for executing a copy and morph operation on a first graphical object in the diagram to create a second graphical object based on the first graphical object when a user selects the first graphical object, wherein the second graphical object has one or more properties that are different than the first graphical object.

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55. A system for generating and displaying a modeling application for simulating a dynamic system, comprising:

user-operable input means for inputting data to the diagramming application;  
a display device for displaying a diagram representing the dynamic system; and  
25 an electronic device including memory for storing computer program instructions and data, and a processor for executing the stored computer program instructions, the computer program instructions including instructions for executing a morph operation on a selected graphical object in the diagram to change one or more properties of the selected graphical object when a user selects the first graphical object, thereby creating a transformed graphical object based on the selected graphical object.